PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project	
Deschutes River Stray Summer Steelhead Assessment	
BPA project number	**20025**
Contract renewal date (mm/yyyy)	
Multiple actions? (indicate Yes or No)	
Business name of agency, institution or organization requesting funding	
OREGON DEPARTMENT OF FISH AND WILDLIFE	
Business acronym (if appropriate)	**ODFW**
Proposal contact person or principal investigator:	
Name	**Tony Nigro**
Mailing address	**P.O. Box 59**
City, ST Zip	**Portland, OR 97207**
Phone	**(503)872-5252**
Fax	**(503)872-5632**
Email address	**Tony.Nigro@state.or.us**
NPPC Program Measure Number(s) which this project addresses	
Measures 5.0F and 5.8A (1994 FWP), NPPC indicated that there was monitoring needed to support the scientific basis for smolt transportation. NPPC also indicated that the relationship between Columbia River flows, velocity, transportation, and smolt [to adult] survival should receive the highest priority.	
FWS/NMFS Biological Opinion Number(s) which this project addresses	
Other planning document references	
CRITFC. 1996. WY-KAN-USH-MI WA-KISH-WIT	
ODFW. 1997. Lower Deschutes River Subbasin Fish Management Plan. Entire Plan.	
Short description	
Review available information to determine the magnitude and cause of stray summer steelhead entering the Deschutes River, Oregon, and identify potential solutions.	
Target species	
Summer Steelhead	

Section 2. Sorting and evaluation

Subbasin
Deschutes River

Evaluation Process Sort

CBFWA caucus		CBFWA eval. process		ISRP project type	
X one or more caucus		If your project fits either of these processes, X one or both		X one or more categories	
X	Anadromous fish		Multi-year (milestone-based evaluation)		Watershed councils/model watersheds
	Resident Fish		Watershed project eval.		Information dissemination
	Wildlife				Operation & maintenance
					New construction
				X	Research & monitoring
					Implementation & mgmt
					Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description
20511	Deschutes River Umbrella Proposal
9404200	Trout Creek Habitat Restoration Project
9303000	Buck Hollow Watershed Restoration Project

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
8903500	Umatilla Hatchery O&M	One potential source of stray fish
8805302	Grande Ronde Satellite Facilities	One potential source of stray fish
8805301	Northeast Oregon Outplanting Facilities	One potential source of stray fish
New Project	Comprehensive Review of Columbia Basin Artificial Production	Could help identify cause of stray problem.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
	NA - This is a new project proposal	

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Assess the magnitude of straying summer steelhead into the Deschutes River.	a	Estimate the numbers and proportion of hatchery strays, Deschutes hatchery, and wild steelhead in the Deschutes River.
		b	Determine the origin of hatchery strays in the Deschutes River.
		c	Determine the stray rate for all Columbia River Basin hatchery summer steelhead stocks by brood and run year.
		d	Summarize the summer steelhead stray rate information for all Columbia Basin fish hatcheries.
		e	Determine spatial and temporal distribution and dropout characteristics of stray steelhead in the Deschutes River.
2	Determine the causes of adult summer steelhead straying into the Deschutes River.	a	Determine the relationship between stray rate and widespread stock differences.
		b	Determine the relationship between stray rate and hatchery practices and experimental treatments.
		c	Determine the relationship between stray rate and juvenile migration.
		d	Determine the relationship between stray rate and juvenile fish transportation.
		e	Determine the relationship between stray rate and adult migration timing and migration conditions.
3	Report findings and the conclusions of the data analysis.	a	Write a report summarizing the findings and conclusions on the magnitude and causes of adult steelhead straying into the Deschutes River.

Objective schedules and costs

Obj #	Start date	End date	Measurable biological		FY2000

	mm/yyy	mm/yyy	objective(s)	Milestone	Cost %
1	10/1/99	9/30/2000	Determine magnitude of steelhead straying	Summarizing report	40%
2	10/1/99	9/30/2000	Determine cause of steelhead straying	Summarizing report	40%
3	6/1/2000	9/30/2000	Prepare Final Project Report	Final Report	20%

Schedule constraints
Project startup will be dependent upon selection of a qualified/experienced project leader.
Completion date
September 30, 2000

Section 5. Budget

FY2000 budget by line item

Item	Note	% of Total	FY2000 ($)
Personnel		46.2	30,221
Fringe benefits		18.5	12,088
Supplies, materials, non-expendable property		3.1	2,010
Operations & maintenance			
Capital acquistions or improvements (e.g. land, buildings, major equipment.)			
NEPA costs			
Construction-related support			
PIT tags	# of tags		
Travel		6.0	3,900
Indirect Costs	@ 35.5%	26.2	17,118
Subcontractor			
Other			

TOTAL BPA REQUESTED BUDGET	$65,337

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
BPA	Stray Steelhead Assessment	76.6%	$65,337
ODFW	Office space and equipment	11.7%	$10,000
ODFW	Hatchery data retrieval	2.9%	$2,500
WDW	Hatchery data retrieval	2.9%	$2,500
USFWS	Hatchery data retrieval	2.9%	$2,500
IDFG	Hatchery data retrieval	2.9%	$2,500
	Total project cost (including BPA portion)		$85,337

Outyear costs

	FY2001	FY01	FY02	FY03
Total budget	**NA**	**NA**	**NA**	**NA**

Section 6. References

Watershed	Reference
Deschutes	Oregon Fish and Wildlife Commission. October 21, 1997. Letter to NMFS concerning effects of stray steelhead on wild Deschutes River population. Portland, Oregon.
Deschutes	ODFW. July 1997. Lower Deschutes River Subbasin Fish Management Plan. Portland, Oregon.
Deschutes	ODFW. 1998. 1997 Mid-Columbia Fish District Annual Report. The Dalles, OR.
Deschutes	ODFW. 1997. 1996 Mid-Columbia Fish District Annual Report. The Dalles, OR.
Deschutes	ODFW. 1996. 1995 Mid-Columbia Fish District Annual Report. The Dalles, OR.
Deschutes	ODFW. 1995. 1994 Mid-Columbia Fish District Annual Report. The Dalles, OR.

Deschutes	ODFW. 1994. 1993 Mid-Columbia Fish District Annual Report. The Dalles, OR.

PART II - NARRATIVE

Section 7. Abstract

The average number of wild summer steelhead escaping to the Deschutes River has declined dramatically since the 1980's, prompting the proposed listing of the population as a threatened species by National Marine Fisheries Service (NMFS). Although a number of factors could potentially be contributing to this population decline, the Oregon Department of Fish and Wildlife (ODFW) believes one possible cause could be the loss of reproductive capacity as a result of indigenous steelhead spawning with out-of-basin stray hatchery steelhead. Hatchery stray steelhead have dominated steelhead runs in the Deschutes River in recent years. In 1994 stray hatchery steelhead comprised 76% of the steelhead run monitored at Sherars Falls (river mile 43). Wild steelhead escapements to the Deschutes River have declined from 6,715 in 1984 to 1,719 in 1997 (Annual Reports, Mid-Columbia Fish District). It also appears possible that a portion of the "wild" escapement may also be stray fish.

This project would compile and analize existing Columbia Basin summer steelhead data to determine the magnitude and cause of the straying problem in the Deschutes River.

Section 8. Project description

a. Technical and/or scientific background

The Oregon Fish and Wildlife Commission, in an October 21, 1997 letter to NMFS, requested that NMFS and ODFW work cooperatively to conduct a joint review of available Columbia Basin steelhead data to determine the magnitude and causes of summer steelhead straying into the Deschutes River. In December 1997, ODFW convened a multi-agency work group, including representation from the Steelhead Management agencies and conservation groups, to address this stray issue. Initial major findings of the work group include the following: (1) the proportion of hatchery steelhead strays in the Deschutes River has increased dramatically since the mid 1980's and currently dominates the run; (2) in addition to hatchery strays, it is possible that a significant portion of the wild origin fish in the Deschutes River may be strays; (3) a 1996 radio telemetry study indicates tha a substantial percentage of Columbia Basin steelhead not only migrated into the Deschutes River, but stayed in the river and presumably spawned; (4) a comparison of limited coded wire tag recoveries seemed to indicate several upper Columbia Basin fish hatcheries had high stray indices; (5) more detailed coded wire tag data analysis indicated that broodstock source and smolt release location are potential factors influencing straying; and (6) preliminary findings have shown no obvious correlation between straying and transported smolts.

b. Rationale and significance to Regional Programs

Hatchery summer steelhead production in the upper Columbia River / Snake River basins, and/or downstream smolt transportation may be contributing to the proliferation of stray steelhead entering the Deschutes River. It is apparent that many of these stray steelhead are remaining in the Deschutes River to spawn.

The spawning of stray steelhead with the indigenous Deschutes River summer steelhead may be posing significant genetic risk to the Deschutes population. The wild Deschutes population has declined from 6,715 in 1984 to 1,719 in 1997. The decline in the number of wild (naturally produced) adults had occurred despite near record numbers of spawning steelhead in the Deschutes River in the last decade.

The Deschutes River has long been one of Oregon's premiere summer steelhead streams**.** The declining numbers of wild steelhead could result in the listing of this population, as well as restrictions on a popular sport and tribal subsistence fishery.

c. Relationships to other projects

There is a potential that other BPA funded steelhead projects in the Columbia River Basin are threatening the exinction of the indigenous Deschutes River population. The Deschutes River population is proposed for listing as a Threatened Species, under the Endangered Species Act.

Benefits from BPA funded Deschutes subbasin fish habitat restoration projects could be in jeopardy if stray steelhead spawning with indigenous fish is reducing genetic fitness and smolt to adult survival. There are a number of other non-BPA funded programs underway in the subbasin that are attempting to improve watershed conditions, stream habitat, and ultimately steelhead production. These complimentary projects are being implemented by the Bureau of Land Management (BLM), ODFW, CTWSRO, Natural Resources Conservation Service (NRCS), Farm Services Administration (FSA), watershed councils, and soil and water conservation districts.

d. **Project history** (for ongoing projects)

This is a new project proposal. However, a multi-agency work group has met to discuss the stray steelhead issue and review some preliminary steelhead data. This work group has agreed there is a significant problem with stray steelhead entering and remaining in the Deschutes River. The work group supports a project that will specifically identify the magnitude and cause of the straying phenomina, as well as identify potential remedial measures that could be implemented to reduce or eliminate the problem.

e. Proposal objectives

The primary objectives of this project proposal are to (1) assess the magnitude of straying summer steelhead into the Deschutes River, (2) determine the causes of adult summer steelhead straying into the Deschutes River, and (3) report findings and the conclusions of the data analized.

Specific proposal objectives include:

Objective 1. Assess the magnitude of straying summer steelhead into the Deschutes River.

Performance Measures: (1) A report summarizing the numbers and proportion of hatchery and wild stray steelhead in the Deschutes River.

Purpose: This objective is intended to evaluate the trends, from 1977 to present, in hatchery strays compared to Deschutes hatchery origin and wild steelhead numbers based on data collected annually at Sherars Falls, the Pelton Trap, the Warm Springs National Fish Hatchery trap, and the sport and tribal in-river fisheries based on fin marks and coded wire tag recoveries.

Objective 2. Determine the causes of adult summer steelhead straying into the Deschutes River.

Performance Measures: A report summarizing the cause of hatchery and wild steelhead straying into the Deschutes River.

Purpose: This objective is intended to provide for the analysis of steelhead data from Columbia Basin fish hatcheries, as well as data on smolt migration monitoring, the transportation program, river conditions, and environmental factors that could help provide the answers for the stray problem.

Objective 3. Report findings and the conclusions of the data analized.

Performance Measures: A report summarizing the magnitude and cause of hatchery and wild steelhead straying into the Deschutes River.

Purpose: This report would present the information, including the causes for the steelhead straying problem. The report would include an analysis of data that will help to identify remedial measures that can be implemented to minimize or eliminate the steelhead stray problem.

f. Methods

The Deschutes River Stray Summer Steelhead Assessment will be implemented with the following tasks listed with the specific project objective presented in **Section 4** of this proposal.

Objective 1. Assess the magnitude of straying summer steelhead into the Deschutes River.

Task 1. Evaluate time trends from 1977 to present (numbers and proportion of the run) of hatchery strays, compared to Deschutes hatchery origin and wild steelhead returns at Sherars Falls (Rm 43), sport and tribal fisheries, Pelton fish trap(Rm 100), and the Warm Springs National Fish Hatchery trap based on fin clips and coded wire tag recoveries.
Task 2. Determine the origin of hatchery strays at each Deschutes River sampling location based on coded wire tags.
Task 3. Determine the stray rate (proportion of coded wire tags recovered in the Deschutes) by origin at each location.
Task 4. Determine the origin of steelhead that do not stray into the Deschutes River.
Task 5. Quantify the number of wild strays at each location based on radio telemetry data and tagging at Sherars Falls.
Task 6. Characterize spatial and temporal distribution and fallout characteristics of steelhead strays into the Deschutes River based on 1996 and 1997 radio telemetry data.

Objective 2. Determine the causes of straying of adult steelhead into the Deschutes River.

Task 1. Determine the effects of widescale stock (A and B steelhead) and geographic (Snake vs upper and lower Columbia) differences.
Task 2. Determine the effects of hatchery practices (broodstock selection, rearing method, size and time of release, release location and method) and experimental treatments.
Task 3. Determine the effects of juvenile migration timing and migration conditions (flow, temperature, and other environmental factors).
Task 4. Determine the effects of the juvenile fish transportation and transportation method (truck vs barge).
Task 5. Determine the effects of adult migration timing and migration conditions (flow, temperature, and other environmental factors).

Objective 3. Report the findings and the conclusions of the data analysis.

Task 1. Write a report summarizing findings and conclusions on the magnitude and causes of steelhead straying into the Deschutes River.
Task 2. Prepare a list of remedial measures that could be expected to reduce or eliminate steelhead straying into the Deschutes River.

g. Facilities and equipment

This project would operate from an existing ODFW office. Project personnel would have the use of a computer, and other office equipment, including communications. The project would require the use of a leased vehicle to access some of the data sources.

h. Budget

The proposal budget (presented in detail in **Section 5**) is primarily directed at funding the personnel required to gather and analize the steelhead data that is available in the Columbia River Basin. There are small budget items that specifically deal with miscellaneous office supplies, utility costs, and travel expences.

Section 9. Key personnel

This project will utilize an experienced Natural Resource Specialist 2 or 3. This position will remain open until funding is available for the position.

Section 10. Information/technology transfer

Information collected and conclusions made will be included in the final project report, which will then be disseminated to the NPPC, BPA, fishery managers and other interested entities.

Congratulations!